

Claims

1. A process for the detection of polymorphic or pseudopolymorphic forms of solid, molecular and crystallizing compounds, or of molecular, cocrystalline compounds or of solid solutions which consist of at least two solid, molecular and crystallizing compounds, in a series investigation using an apparatus for parallel investigations in vessels of an array under different conditions in each vessel, and the identification thereof using separate detection units or detection units integrated in the apparatus, in which compounds which crystallize, crystallize with salt formation and/or form solvates or hydrates and crystallize are treated in the presence of identical or different solvents or solvent mixtures under identical or different physical conditions and optionally with salt, solvate or hydrate formation or formation of cocrystalline compounds or solid solutions until a phase equilibrium is established, which is characterized in that substantially only the amorphous form or a solvate of the crystallizing compound or substantially only the amorphous form or a solvate of a compound in a mixture of at least two compounds is used as a suspension or solution, the solutions of amorphous compounds or solvates having, at the same temperature, a higher content of crystallizing compounds than is achievable with a corresponding crystalline compound.
2. A process according to claim 1, wherein the solutions are present as dilute, saturated or supersaturated solutions.
3. A process according to claim 2, wherein the content of amorphous compound or solvate in solution is an excess of at least 30% by weight, based on the amount of a corresponding crystalline compound dissolved under identical conditions.
4. A process according to claim 3, wherein the excess is at least 50% by weight.
5. A process according to claim 3, wherein the excess is at least 100% by weight.
6. A process according to claim 1, which is carried out in an arrangement for the chemical or physical modification of substances and the determination thereof by means of spectroscopic methods, which consists of
 - a) a flow-through seal formed from a substrate and at least two seals which are arranged in series and are let air-tight into cavities and project from the substrate on the side of inlet and outlet orifices, one end of the substrate being provided with an inlet orifice and one end with

- 17 -

an outlet orifice, and the seals being provided with at least one inlet orifice and one outlet orifice, and the substrate contains at least one first continuous channel which begins at the inlet orifice and is arranged in such a way that it opens into inlet orifices on the side walls of the seals arranged in series, and a second continuous channel which begins at the outlet orifice and is arranged in such a way that it opens into outlet orifices on the side walls of the seals arranged in series;

- b) a titre plate whose rows of wells have an air-tight connection with the seals of the flow-through seal;
- c) connections between the inlet and outlet orifices to one or more gas sources and/or a vacuum pump;
- d) a radiation source for radiating light into the vessels; and
- e) a detector for measuring spectral changes.

7. A process according to claim 1, wherein amorphous substances or solvates are suspended and/or dissolved in different solvents or solvent mixtures and are present in the individual vessels of a titre plate.

8. A process according to claim 7, wherein the solutions or suspensions of amorphous compound or solvate in different solvents and/or solvent mixtures are present in the vessels of a titre plate.

9. An arrangement for the parallel detection of polymorphic or pseudopolymorphic forms of solid, molecular and crystallizing compounds or of molecular, cocrystalline compounds or of solid solutions which consist of at least two solid, molecular and crystallizing compounds, in which substantially only the amorphous form of the crystallizing compound, a solvate of the crystallizing compound or substantially only the amorphous form or a solvate of a compound in a mixture of at least two compounds is present in the containers of an array as a suspension or solution, the solutions of amorphous compounds having, at the same temperature, a higher content of crystallizable compounds than is achievable with a corresponding crystalline compound.

10. An apparatus comprising

- a) an array of vessels for a parallel series investigation,
- b) devices for stirring, shaking, cooling or heating samples in the vessels and/or evaporating solvents of the samples in the vessels,
- c) detection units which are separate or are integrated in the apparatus and comprise

- 18 -

radiation source and measuring unit for the determination of polymorphic or pseudopolymorphic forms of solid, molecular and crystallizing compounds or of molecular, cocrystalline compounds or of solid solutions which consist of at least two solid, molecular and crystallizing compounds, wherein substantially only the amorphous form of the crystallizing compound or a solvate of the crystallizing compound or substantially only the amorphous form of a compound or a solvate of a compound in a mixture of at least two compounds is present as a suspension or solution, the solutions of amorphous compounds having, at the same temperature, a higher content of crystallizing compounds than is achievable with a corresponding crystalline compound.